

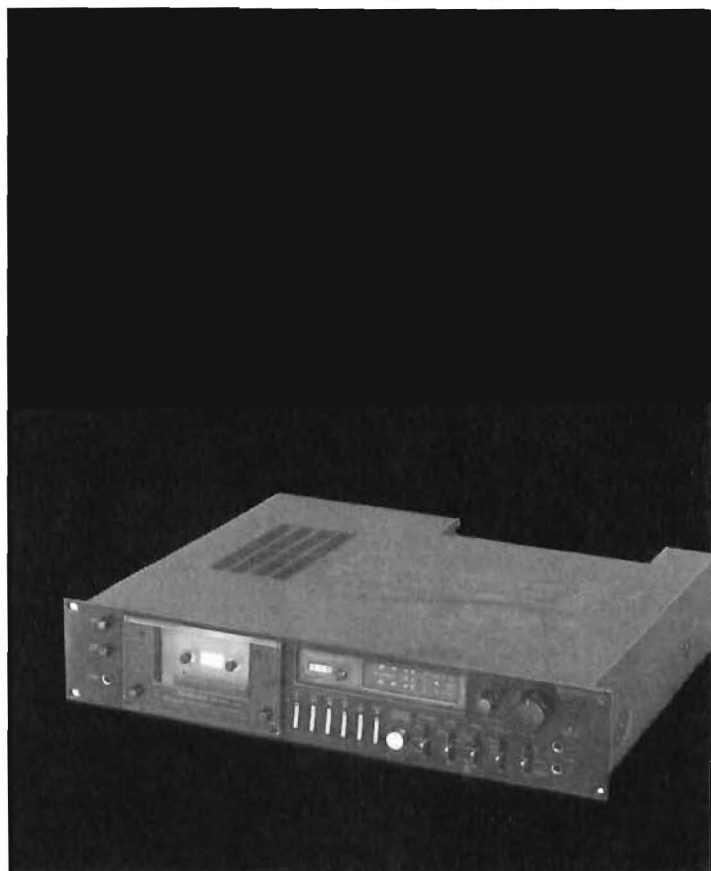
# Technics

*Paul Fofchino*

TAPE DECK

## RS-M85<sub>mk2</sub>

OPERATING INSTRUCTIONS



Before operating this set, please read these instructions completely.

We want to thank you for selecting the model RS-M85 MK2 Technics cassette tape deck for your recording and playback enjoyment. To obtain the maximum benefit of the many features of this deck, please carefully read these operation instructions.

FEATURES

- Metal Tape Recording
- The First Vertical Hold Front-Loading Cassette Tape Deck using Direct-Drive Motor
- Quartz-Locked Servo Control System
- Two-Motor System—Separate Coreless Motor for Reel Drive
- Full IC Logic Control
- High Quality Amplifier Designed for Low Noise and High Linearity
- Bar Graph Fluorescent Level Meter
- Tape Selector Plus Fine Bias Control
- Recently Developed Laminated SX Head
- Record Muting
- Dolby Noise-Reduction System
- Full Auto-Stop
- Timer Standby
- Remaining Tape Check Lamp
- Memory Rewind
- Level Meter Brightness Selector

**WARNING:**  
TO PREVENT FIRE OR SHOCK HAZARD,  
DO NOT EXPOSE THIS APPLIANCE TO  
RAIN OR MOISTURE.

OPERATION NOTES

1. **Horizontal placement**  
For best performance, place this unit in a horizontal position.
2. **Location**  
Performance may be adversely affected by extremely hot [above 100°F. (35°C.)] or extremely cold [below 40°F. (5°C.)] locations, direct sunshine, or excessive vibration.
3. **Power source**  
This unit features a Direct-Drive DC Operated Capstan Motor which makes it possible to operate on 50 Hz or 60 Hz AC line voltage without any conversion. The voltage source should be within  $\pm 5\%$  of the unit's rated voltage. Variations in excess of  $\pm 10\%$  of rated voltage may cause uneven performance, or possible damage to the unit.
4. **Clean the head assembly**  
One of the most important factors in the determination of good tape recorder performance is regular cleaning of the Head Assembly.
5. A "click" noise may be heard when the Power Switch is turned on or off. To avoid this, be sure to set the volume control of the amplifier to the minimum position.

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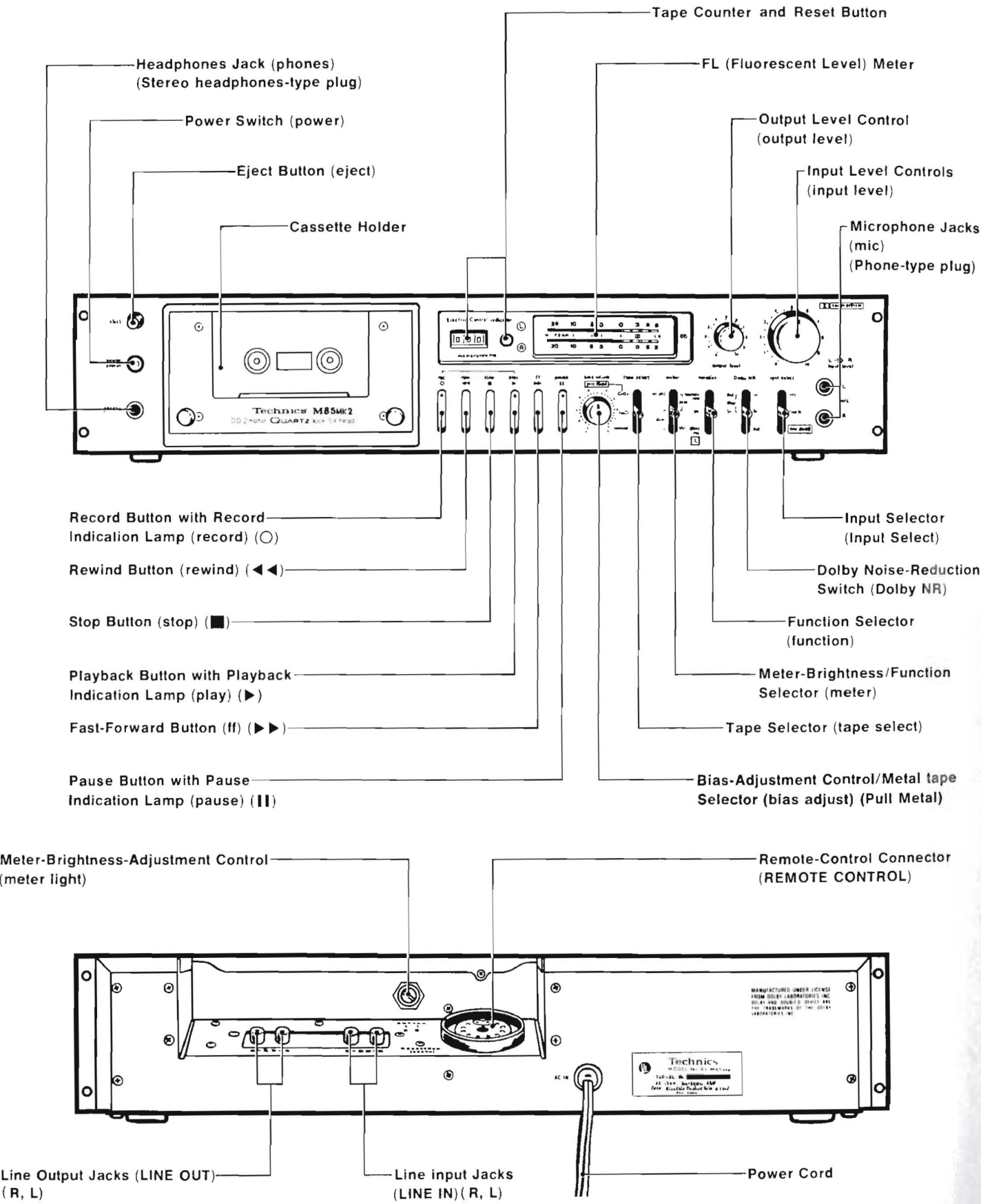
The serial number of this product may be found on the back cover of the unit.  
You should note the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model no. \_\_\_\_\_

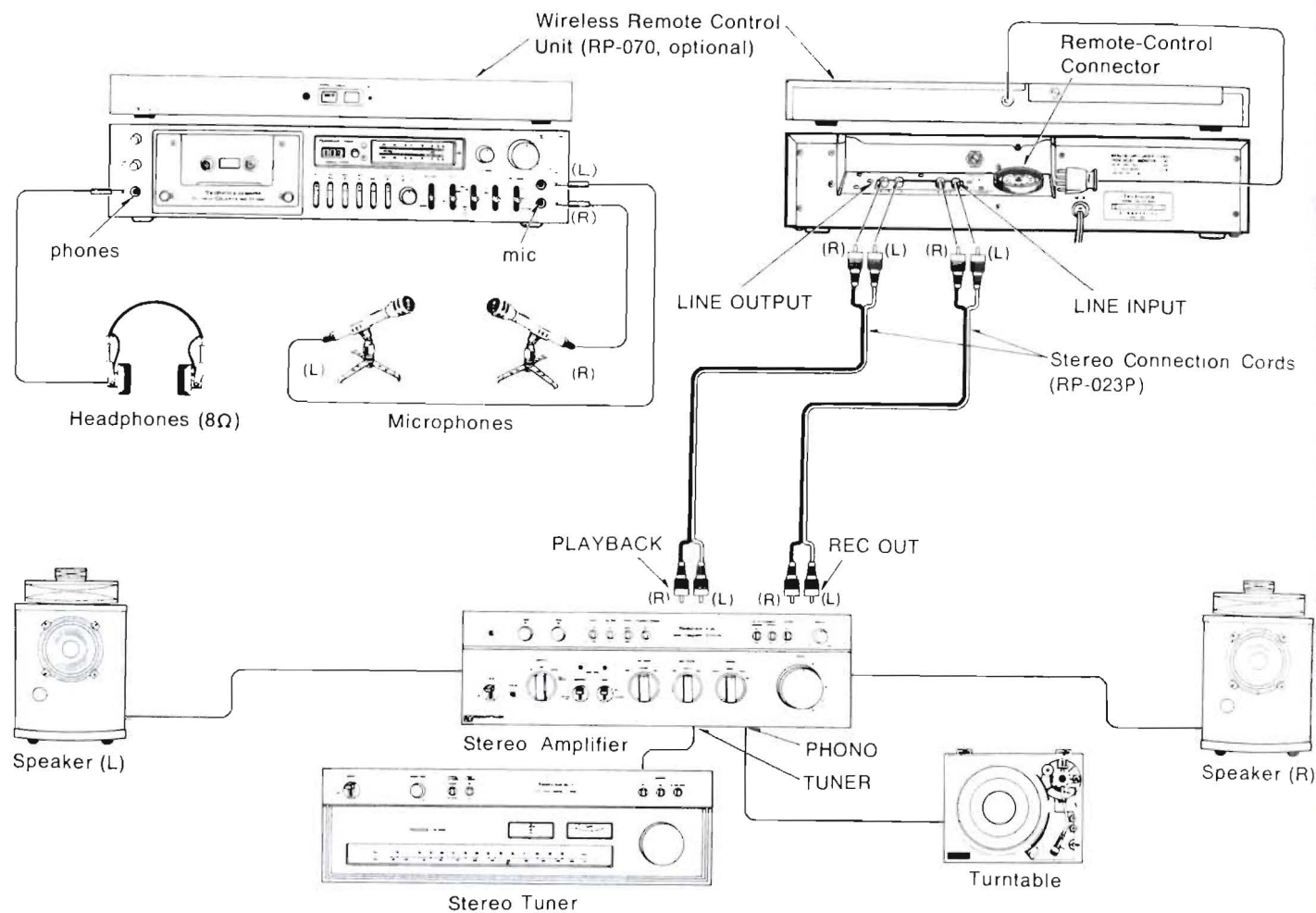
Serial no. \_\_\_\_\_

\*'Dolby' and the double-D symbol are trademarks of Dolby Laboratories.

CONTROLS



CONNECTION



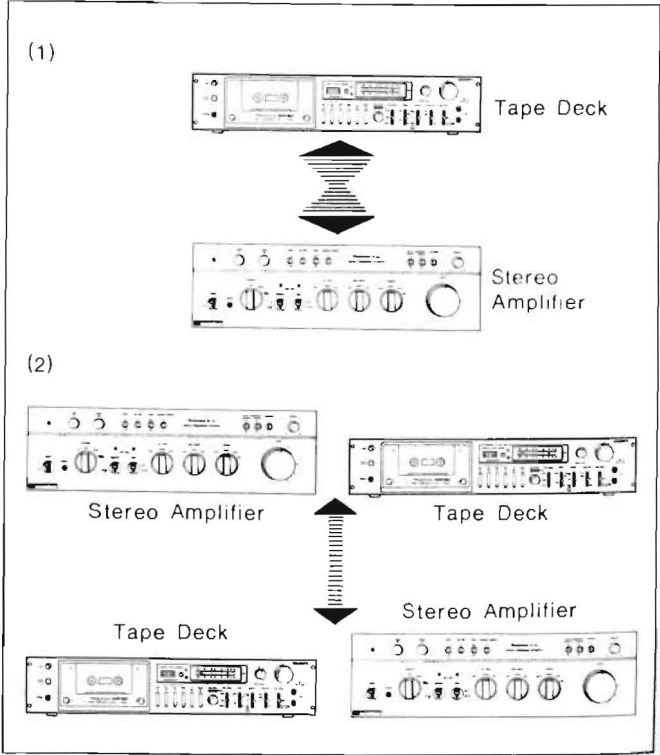
Connection Note

Connections should be made in accordance with the connection diagram and the following instructions. When 2 microphones are used in order to record in stereophonic sound, be sure both of them have the same specification standards.

Location of this unit and stereo amplifier

If this unit is placed on top of the stereo amplifier or next to it, a "hum" noise may be heard during tape playback. Refer to the information below in order to avoid this.

- (1) If the stereo amplifier and this unit are placed one above the other, leave as much space as possible between them, and place them where there is the least amount of hum.
- (2) If the stereo amplifier and this unit are placed one beside the other, try reversing their positions, and place them where there is the least amount of hum.



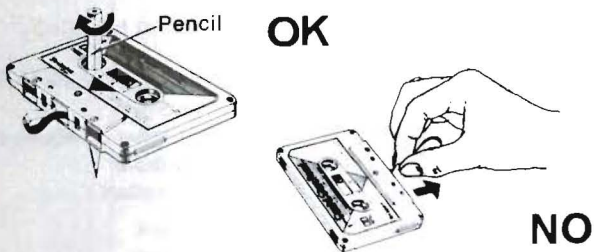


## ABOUT CASSETTE TAPE

The cassette tape used in this unit is the universal type used throughout the world.

### Notes:

1. Do not pull the tape out of the cassette openings.
2. If the tape is loose in the cassette, the tape may become wound onto the Pinch Roller and result in breakage or damage. If the tape is loose, use a pencil as a drive shaft to rotate the reel in the proper direction.



3. Avoid storing this unit in places where the temperature and/or the humidity is high.
4. If the tape is very tightly wound/or unevenly wound, wind and rewind it in the fast forward and rewind modes before use.
5. Use high quality tape upto the length of C-90.
6. Since dirt on the Head or Pinch Roller can cause tape malfunctions, these parts must be kept clean, as instructed in the "MAINTENANCE" section on page 10.

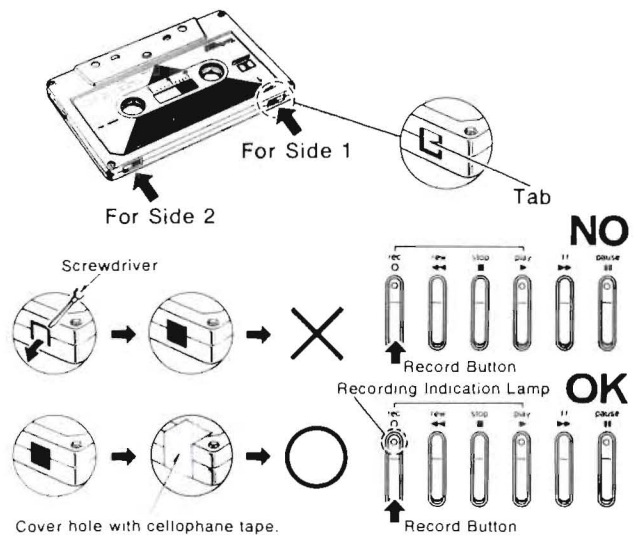
## ACCIDENTAL-ERASE PREVENTION

Tape cassettes have two erase-prevention tabs, one each for Side 1 and Side 2.

When these tabs are removed (by using a screwdriver or similar tool), the accidental-erase prevention system of the tape deck functions to prevent accidental erasure of the original recorded material (by making another recording over the original material), and thus protects valuable recordings from loss.

For this unit, if the erase-prevention tabs of a cassette have been removed, the unit's accidental-erase prevention system will function when the Record Button is pressed: the Recording Indication Lamp will not illuminate, and a recording cannot be made.

To make a recording, if desired, on a cassette from which these tabs have been removed, simply cover the holes where the tabs were, and then make the recording in the usual way.



## CASSETTE INSERTION AND REMOVAL

### Insertion

1. When the Eject Button is pressed, the Cassette Holder will move outward gently, and then tilt slightly forward.
2. Place the cassette into the Cassette Holder so that the edge with the holes (where tape can be seen) is facing downward, and so that the fully wound tape is on the left.
3. Close the Cassette Holder by gently pushing the center part (above the glass window).

### Note:

Be sure the cassette is placed so that the edge with the holes is facing downward.

The Cassette Holder cannot be closed if the cassette is inserted incorrectly.

The operation buttons of this unit will not function if they are pressed while the Cassette Holder is open.

### Cassette removal

1. Press the Stop Button.
2. When the Eject Button is pressed, the Cassette Holder will move outward gently, and then tilt slightly forward.
3. Remove the cassette.

## CASSETTE EJECTION MECHANISM

Be careful not to press the Eject Button while the tape is moving, because this will stop the operation and the Cassette Holder will open.

## FAST FORWARD AND REWIND

1. When the Fast Forward Button is pressed, the tape will be rapidly forwarded from left to right. When the Rewind Button is pressed, tape will be rapidly rewound from right to left.
2. The tape will stop when the Stop Button is pressed.
3. This unit has a fully-automatic-stop system which stops tape movement when the tape reaches its end.

METAL TAPE

A word about "Metal tape"

Conventional cassette tapes can be broadly classified into 2 categories according to the magnetic material coated on the tape surface: the ferric-oxide ( $\gamma\text{-Fe}_2\text{O}_3$ ) type including ordinary LH tape, etc.; and the chrome-dioxide ( $\text{CrO}_2$ ) type. Continued technological advances have been made in an attempt to develop these tapes to a high level of performance, but recently there has been a recognized need for the development of a new material to improve performance much further.

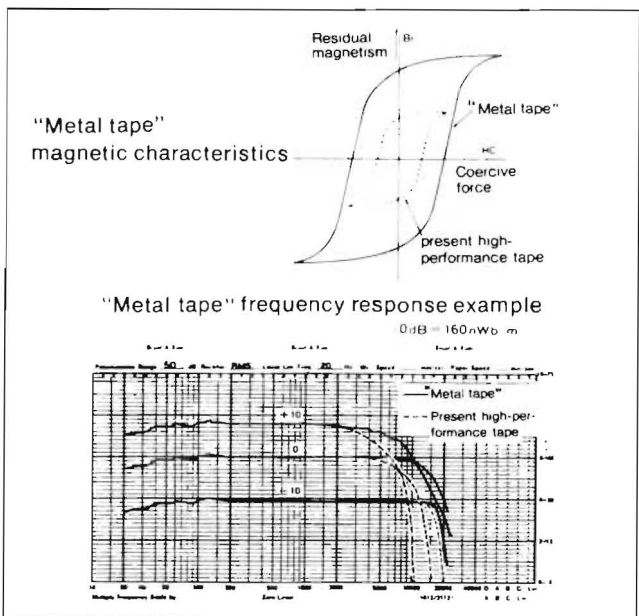
In response to this need, "Metal tape" has been developed as a new kind of tape, employing a magnetic alloy of pure iron (Fe) as the main component in the magnetic substance. In comparison with conventional cassette tape, "Metal tape" can record a far greater amount of information at a high density. As a result, the maximum output level (MOL) has been improved throughout the entire range, and, in particular, the frequency response characteristics at high levels and the dynamic range in the high range have been greatly improved.

This means, therefore, that a remarkable improvement of sound quality has been made possible.

(It should be noted that the tape base and parts of the tape other than the magnetic substance are composed of the same material as previously used.)

Advantages and magnetic characteristics of "Metal tape"

- 1. Maximum output level (MOL) is greater at all frequencies.
- 2. Excellent frequency response characteristics at high input level.
- 3. Wide dynamic range at high frequencies.
- 4. Excellent signal-to-noise ratio at high frequencies.
- 5. Low distortion.



The "Metal tape" selector

"Metal tapes" significantly improve the performance of the tape deck, but, because there is a difference of bias characteristics and the erase characteristics between conventional and "Metal tapes", it is now necessary to have a special tape selector position for "Metal tape". Our tape recorders will bear the "Metal" designation for this position of the tape selector.

The "Metal" position using

- 1. Playback time-constant...70 $\mu$ S (same as at the "CrO<sub>2</sub>" position)
- 2. Bias current .....about 150% Higher (compared to "CrO<sub>2</sub>" position)
- 3. Erase current .....about 150% Higher (compared to "CrO<sub>2</sub>" position)
- 4. Recording equalization...Special equalization

Technological developments to accomodate "Metal tape"

"Metal tape" is a totally new kind of high performance tape, and conventional cassette tape decks cannot sufficiently bring out its performance potential. Our company has succeeded in developing the following technology to exploit the advantages of "Metal tape" to its fullest extent.

1. Development of SX Head with minimal distortion accompanying high input signal levels

The SX (sendust) Head has a high level of saturation magnetic flux density and it is ideal for "Metal tape" which feature a high MOL (maximum output level). We have further improved the conventional SX Head.

2. High efficiency Erase Head

Conventional Erase Head does not adequately erase "Metal tapes." Our company has developed a new Erase Head with a Sendust tip.

3. Increased power in the bias oscillation circuitry

"Metal tape" requires an erase current and a bias current that are both 1.5 times greater than those of chrome-dioxide tape. We have increased the power in order to provide this current and maintain a low distortion ratio.



TAPE SELECTOR

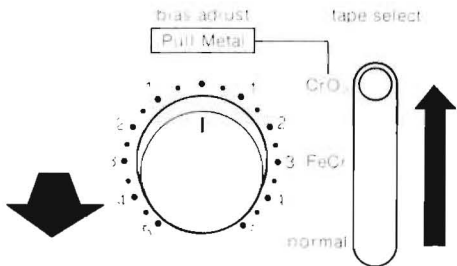
In order to get the best performance from tape, and to record and playback with little distortion, the Tape Selector should be set as shown below.

| Tape Selector Setting | Brand                 | Tape Type  |
|-----------------------|-----------------------|------------|
| normal                | AMPEX GRAND MASTER I  | C-60, C-90 |
|                       | BASF PROFESSIONAL I   | C-60, C-90 |
|                       | FUJI FX I             | C-60, C-90 |
|                       | MAXELL UD             | C-60, C-90 |
|                       | MAXELL UDXL I         | C-60, C-90 |
|                       | SONY UHF              | C-60, C-90 |
|                       | TDK AD                | C-60, C-90 |
| Fe-Cr                 | BASF PROFESSIONAL III | C-60       |
|                       | SONY Fe-Cr            | C-60       |
|                       | SCOTCH MASTER III     | C-60       |
| CrO <sub>2</sub>      | AMPEX GRAND MASTER II | C-60       |
|                       | BASF PROFESSIONAL II  | C-60       |
|                       | FUJI FX II            | C-60       |
|                       | MAXELL UDXL II        | C-60       |
|                       | SCOTCH MASTER II      | C-60       |
|                       | TDK SA                | C-46, C-60 |
| Metal                 |                       |            |

Note that there may be a difference in sensitivity of 2 or 3 dB, depending on the type of tape.

“Metal Tape” SETTING

When using “Metal tape” pull the Bias Adjust Control/ “Metal tape” Selector forward to its click-stop position, also the Tape Selector must be set to the “CrO<sub>2</sub>” position.



HOW TO USE THE BIAS-ADJUSTMENT CONTROL

This unit includes a system for minor adjustments of the recording bias. The system is designed so that optimum performance can be obtained when the Bias-Adjustment Control is set to its center “click-stop” position, and, therefore, it should be set to this position for best recording results under ordinary conditions.

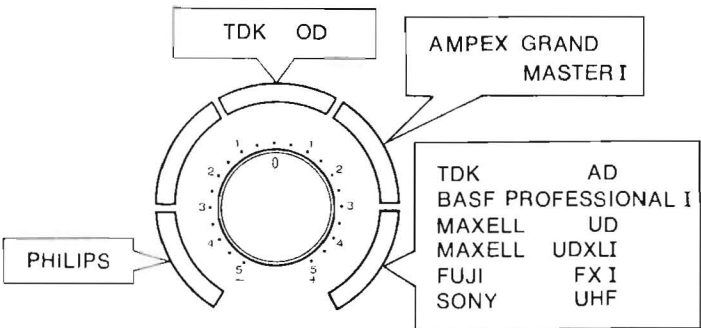
A great many types of “low-noise, high-output” tapes have appeared recently, however, and the optimum bias value which will result in the flattest frequency response characteristic is, to be most precise, slightly different for each of them.

As a result, in order to obtain the finest possible performance from each of these types of “low-noise, high-output” tapes, a flatter frequency response characteristic can be obtained by making minor adjustment of the bias while referring to figure below.

Although the Bias-Adjustment Control will function when the Tape Selector is set to either the “CrO<sub>2</sub>” position the “Fe-Cr” position or “Metal” position, it is suggested that this control be set to the center “click-stop” position when CrO<sub>2</sub> or Fe-Cr tape is used, because there are not a great many types of these tapes, and there is not much difference in the optimum bias setting for each type.

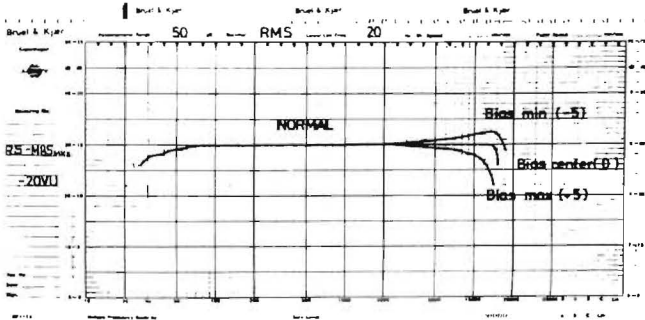
For brands of tape other than those shown in figure below, the optimum bias value can be determined by recording (at a recording level of about -20 dB) the characteristic noise heard between FM broadcast stations. When this recorded noise is played back. It should have the same noise as the original noise heard from the tuner.

If not, readjust the Bias and repeat the test procedure, until the recorded noise is the same as the original noise heard from the tuner. This setting of the Bias-Adjustment Control, then, is the best position for use with such tape.



- \*The examples in figure above are based upon the Tape Selector set to the “normal” position.
- \*There may be a slight difference even for tapes of the same brand.
- \*The Bias-Adjustment Control has no effect during playback.
- \*The Bias cannot be finely adjusted with “Metal tape”.

FREQUENCY RESPONSE VS. BIAS LEVEL



## PLAYBACK

### Note:

- Note that the operation buttons will not function after the power is turned on until approximately 5 seconds have passed. This muting circuitry is used in order to eliminate annoying click noise.

1. Press the Power Switch to the "on" position.
2. After pressing the Eject Button, place the cassette in the cassette holder, and then close it.
3. For ordinary tape playback, set the Dolby Noise-Reduction Switch to the "out" position. For playback of a tape recorded by the Dolby system, set the switch to the "in" position.
4. Set the Tape Selector to the "normal," "CrO<sub>2</sub>" "Fe-Cr" or "Metal" position, depending upon the type of tape to be used.  
(Refer to the section "Tape Selector" on page 6.)
5. Press the Reset Button to reset the numbers to "000".
6. When the Play Button is pressed, the Playback Indication Lamp will illuminate and playback will begin.
7. Set the Output-Level Control to its maximum position.

- This unit is designed so that the rated output of the Line-Output Terminals ("LINE OUT") is 700 mV when the Output-Level Control is set to its maximum position ("10") and the "0 dB" indication of the Fluorescent Level Meter is illuminated.

8. Adjust the volume level and tone quality by using the volume control and tone controls of the stereo amplifier to which this unit is connected.

- When listening through headphones, adjust the volume level by using the Output-Level Control of this unit.

9. Press the Stop Button to stop tape playback. Note that the tape movement will be automatically stopped by the Automatic-Stop system when the tape reaches its end.

- When a record player, tuner or other equipment is connected to the stereo amplifier to which this unit is connected, it is suggested (for convenience when using the input selector of the stereo amplifier) that the output level of this unit and of other connected equipment be set to the same level.

## RECORDING

1. Press the Power Switch to the "on" position.
2. After pressing the Eject Button, place the cassette in the Cassette Holder, and then close it.
3. If the recording is to be made by using the Dolby Noise-Reduction system, set the Dolby Noise-Reduction Switch to the "in" position. For an ordinary recording, set it to the "out" position.
4. Set the Tape Selector to the "normal," "CrO<sub>2</sub>", "Fe-Cr" or "Metal" position, depending upon the type of tape to be used.  
(Refer to the section "Tape Selector" on page 6.)
5. If minor adjustment of the bias is necessary, use the Bias-Adjustment Control.  
(Refer to the section "HOW TO USE THE BIAS-ADJUSTMENT CONTROL" on Page 6.)
6. If the recording is to be made from a sound source connected to the Line Input Jacks, set the Input Selector to the "line in" position; and, if the recording is to be made through microphones, set it to the "mic" position.
7. When the Record Button is pressed, the Recording Indication Lamp will illuminate, and the unit will be in the recording stand-by condition. The recording level can be adjusted at this time.  
When adjusting the recording level, use the Input Level Controls to adjust so that the "0 dB" indication is not exceeded even when the signal is at a high level.  
(Refer to the section "Adjustment of the recording level," on page 8, for further details.)
8. Press the Reset Button to reset the numbers to "000."
9. When the Playback Button is pressed, the Playback Indication Lamp will illuminate, and the recording will begin.
10. To temporarily stop tape movement while recording, press the Pause Button. The tape movement will then stop, and the Pause Indication Lamp will illuminate, but the unit will remain in the recording mode.  
To resume recording, press the Playback Button to start tape movement.
11. Press the Stop Button to stop the recording. Note that the tape movement will be automatically stopped by the Automatic-Stop system when the tape reaches its end.

### Notes:

1. After making a valuable recording, it is suggested that the accidental-erase prevention tabs be removed, using a screwdriver or similar tool, in order to prevent accidental erasing of the recording by later re-recording over it.
2. For recording, therefore, be sure that the cassette has the tabs intact, or that the holes (where the tabs were) are covered by cellophane tape.
3. Note that no sound will be recorded on the tape if the Input Selector is in the "rec mute" position, even though monitor sound can be heard and the Fluorescent Level Meter continues to function.
4. For recording, the Record Button must be pressed first, then the Playback Button.  
\* For information concerning record muting, refer to page 10.



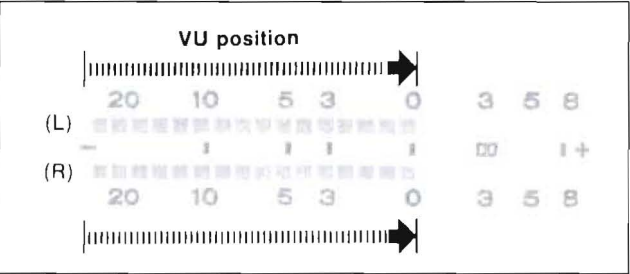
FLUORESCENT LEVEL METER

The FL Level Meter of this unit is a new type meter, and is completely different in principle than conventional level meters which have indication needles. It can, however, be used the same way for adjustment of the recording level. During playback it indicates the playback level, and during recording it indicates the recording level. In addition, because the meter of this unit can be used for both peak and VU indication, it is possible to make recordings with a good signal-to-noise ratio, with little distortion, and with the tape recorded to its very limit of saturation. When the Meter-Brightness/Function Selector is set to the "PEAK" position, the word "PEAK" will illuminate on the surface of the meter. The FL Level Meter scales are designed to indicate in 2 colors to make instant recognition easy: yellow below "0 dB", and orange above "0 dB."

1. Adjustment of the recording level

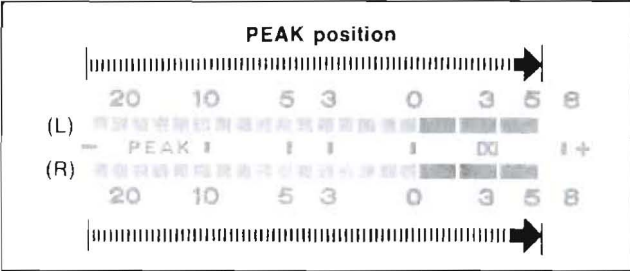
"VU" position:

Adjust so that the illumination of the meter does not exceed the "0 dB" indication at the greatest signal level.



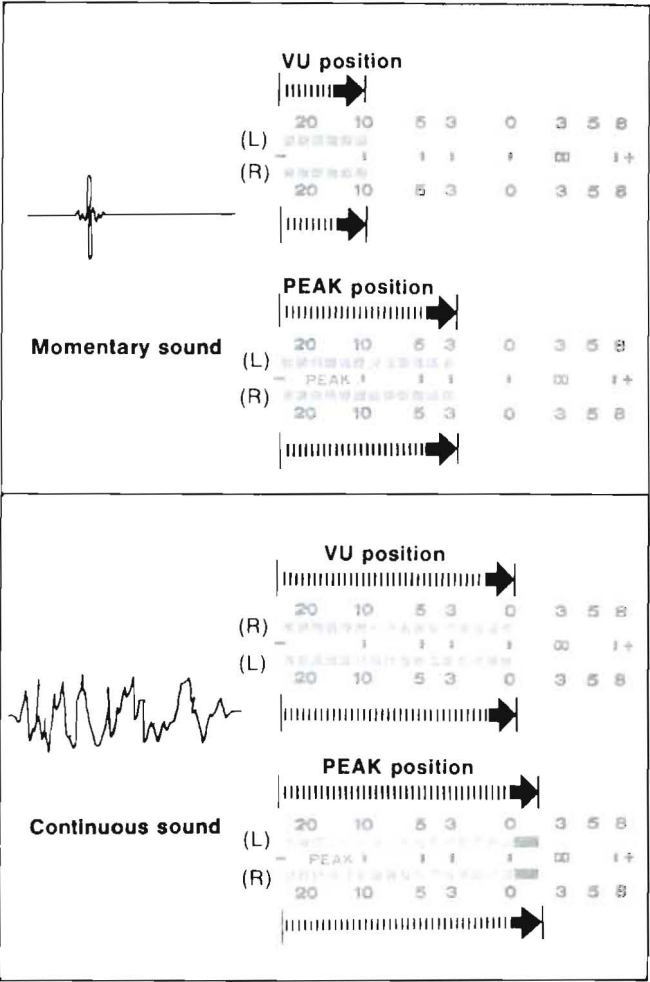
"PEAK" position:

Adjust so that the illumination is up to the "+5 dB" position. In the same way as for the "VU" indication, adjust so that the illumination does not exceed the "0 dB" indication. Then set the Meter-Brightness/Function Selector to the "PEAK" position, and, if the illumination moves as high as the "+8 dB" position, use the Input Level Controls to reduce the level so that the meter illuminate up to the "+5 dB" position when the Meter-Brightness/Function Selector is set to the "PEAK" position.



2. Difference in illumination at the "PEAK" and "VU" positions:

Unlike ordinary level meters, the EL Level Meter of this unit has a fast indication response, responding with perfect correspondence to input signals. It can, therefore be used for very precise indication of peak signals. signals. The illuminated indications differ, as shown below, depending upon whether the setting is to the "PEAK" position or to the "VU" position.



3. Selection of brightness of FL Level Meter:

The Meter-Brightness/Function Selector can be used to select either of two degrees of brightness of the FL Level Meter. When it is set to the "dim" position, the brightness is less than at the "bright" position, and, when it is set to the "bright" position, the Meter-Brightness-Adjustment Control on the rear panel can be used for further adjustment to any desired degree of brightness between the "dim" and "bright" illumination.

MONITORING

To listen to the recording as it is being made, simply connect stereo headphones (8Ω) to the Headphones Jack. You may also listen to the program as it is being recorded if your receiver or amplifier is equipped with a tape-monitor switch.

## TIMER RECORDING AND PLAYBACK

This unit is designed so that timer recordings and playback are possible simply by setting the Function Selector. Recording or playback will automatically begin, if the Function Selector is set to the "timer rec" position, when the power is turned on by the timer. If the recording-prevention tabs of the cassette are intact, a timer recording will then be made. If they are not intact, timer playback will begin automatically. When not using the unit for a timer recording or timer playback, therefore, be sure to set the Function Selector to the "off" position.

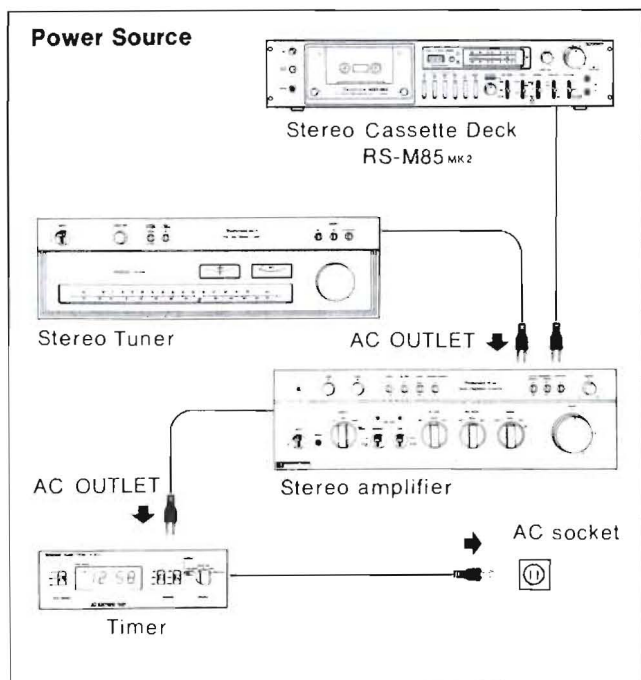
### Recording with a Timer

#### (Timer recording of FM broadcasts)

1. Make connections to the power source as shown in the figure below.
2. Insert a tape upon which no recording has been made or one which has been erased, and which has its accidental-erase-prevention tabs intact (or has the tab holes covered by cellophane tape), and turn on the power.

- If a new recording is to be made of an already-recorded tape, erase the first part of the recording beforehand (in order to assure that none of the previous sound appears at the new recording), and then prepare the tape so that the new recording will begin from a part of the tape that has been completely erased.

3. Turn to the FM broadcast station, press only the Record Button, and then adjust the recording level.
4. Set the timer to the time the recording should begin. (Depending upon the type of timer, the power might be turned off at this time.)
5. Set the Function Selector to the "timer rec" position. This completes the preparations for making a timer recording. When the power is turned on (by the timer), the FM broadcast will be recorded automatically.



### Timer playback

1. Insert a recorded cassette from which the record-prevention tabs have been removed, and make connections in the same way as for Timer record.
2. Set the Output-level control to its maximum position.
3. Playback the tape in order to make adjustments (at the stereo amplifier) to the volume level and tone quality desired when the timer playback begins.
4. Rewind the tape to the position where timer playback is to begin, and set the timer to the desired time. (Depending upon the type of timer, the power might be turned off at this time.)
5. Set the Function Selector to the "timer rec" position. This completes the preparations for timer playback. At the desired time, the power will be turned on and the timer playback will begin.

#### Notes:

- When preparing for timer playback, first play the tape in order to adjust (by using the controls on the stereo amplifier) the volume and tone as desired. When these adjustments are finished, rewind the tape to the position from which the timer playback is to begin.
- Before using the timer, refer to its operating instructions.
- For timer recording and playback, the muting circuitry will operate when the power is turned on, delaying the start of operation for about 5 seconds.

## MEMORY REWIND

The "Memory Rewind" system can be used to conveniently return the tape automatically, during rewind, to any desired position.

### Convenient uses of the Memory Rewind system

1. To return to the beginning of a recording and play it back immediately after making the recording.
2. To repeatedly begin playback many times from the same position.

### How to use the Memory Rewind system

1. When, during recording or playback, the tape reaches the point to which it should later be returned, push the Reset Button to reset it to "000."
2. At the same time, set the Function Selector to the "memory rew" position.
3. When the recording or playback is finished, stop the tape movement by pressing the Stop Button.
4. Then, by simply pressing the Rewind Button, the tape will be rewound to a position slightly prior to the "000" reading of the Tape Counter, where the tape will automatically stop.
5. After the tape has been rewound and stopped at the pre-set position in this way, tape rewind can be continued, if desired, by pressing the Rewind Button once again.



## RECORDING MUTING

The record-muting feature is convenient to prevent recording such unwanted material as commercial messages when recording FM radio broadcasts, or the "click" noise heard when the stylus descends to the disc surface.

Because this unit is designed so that switching can be made by using the Input Selector, use this feature when recording from a source connected to the Line Input Jacks.

### Use of the record-muting function

When the Input Selector is set to the "rec mute" position, the sound source can still be heard and the Fluorescent Level Meter will not continue to show indications, and no sound will be recorded on the tape.

#### 1. When recording an FM radio broadcast

To avoid recording unwanted material such as commercial messages listen to the monitor sound and, when a tune reaches its end, set the Input Selector to the "rec mute" position. Next, push the Pause Button after letting the tape continue to move for about 5 seconds, and then return the Input Selector to the "line in" position. Then, while listening to the monitor sound, once again press the Playback Button just before the next tune begins.

#### 2. When recording from a phono disc

To avoid recording the "click" noise which occurs when the stylus descends to the record surface, first press the Record Button and the Pause Button, and then begin the disc play and adjust the recording level. Next, lift the stylus up from the disc, and set the Input Selector to the "rec mute" position. Then press the Playback Button to begin the tape moving in the recording mode, and, after lowering the stylus to the disc surface, set the Input Selector to the "line in" position. By following these steps, the "click" noise will not be recorded.

#### 3. Other uses

The tape can be erased by setting the Input Selector to the "rec mute" position and moving the tape in the recording mode, without setting the Input Level Controls to the minimum position.

#### Note:

Before beginning a recording, always first check to be sure that the Input Selector is not set to the "rec mute" position. If it remains in that position, monitor sound will still be heard and the FL Level Meter will not function, and no sound will be recorded on the tape.

## AUTOMATIC-STOP SYSTEM (Full-Auto-Stop System)

This unit has a full automatic-stop system. When the tape comes to its end during recording, playback, fast forward or rewind, the tape-transport mechanism automatically releases and places the unit into the stop mode.

\* Because the mechanism automatically stops when the tape comes to its end, both the operating parts and the tape itself are protected. This unit is free from problems such as Pinch Roller deformation resulting from leaving the unit in the stop condition (without pushing the Stop Button) for a long period of time.

## DOLBY RECORDING

This unit includes the Dolby noise-reduction system, which reduces tape noise to a remarkable degree.

Briefly, the system works as follows: At low sound levels (where tape noise is most noticeable), the high-frequency portion of the sound is recorded at a higher level. Tape noise is not amplified.

During playback, the level of only that portion of the signal which was increased at the time of the recording, as well as tape noise, is reduced by a like amount. This causes the signal to be heard at a normal level, and the tape noise to be reduced significantly.

## MULTIPLEX FILTER

FM stereo broadcast signals consist of a 19 kHz pilot signal and a 38 kHz sub-carrier. When a Dolby recording is made of an FM stereo broadcast, the Dolby circuitry will not function correctly because it detects signals leaking from the FM tuner. For this reason, the broadcast signals pass through a multiplex filter system to remove the unwanted signals, thus assuring that Dolby recordings can be correctly made.

Except when recording FM stereo broadcast, set the Dolby Noise-Reduction Switch to the "filter out" position.

## REMOTE-CONTROL OPERATION

Because this unit employs an electronically-controlled system for operation, using IC logic circuitry, the operations of the unit can be controlled from a distance by using the RP-070 Wireless Remote-Control Unit or the RP-9690 Remote-Control Unit (both available optionally as a separate purchase).

## ERASING

When a new recording is made, any previously recorded material on the tape is automatically erased, and only the new recording remains.

To completely erase a recorded tape, set the Input Selector to the "rec mute" position or set the Input Level Controls to their minimum ("0") position. Then set the Tape Selector to the "CrO<sub>2</sub>" position, set the Bias-Adjustment Control to its center "click" position, and then operate the unit in the recording mode.

To erase "Metal tape", set the "Metal tape" Selector to the "Metal" position and then allow the tape to run as instructed under the procedure for recording.

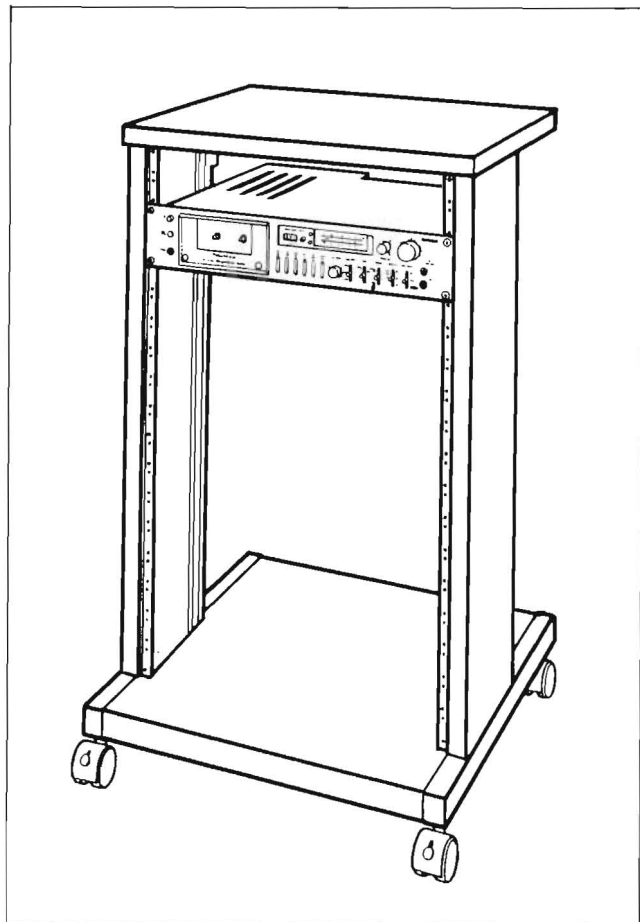
By following this procedure in both directions, all recorded material on the tape can be erased.



## RACK MOUNTING

This unit is constructed to fit racks of E.I.A. Standard specifications (19 inch racks).

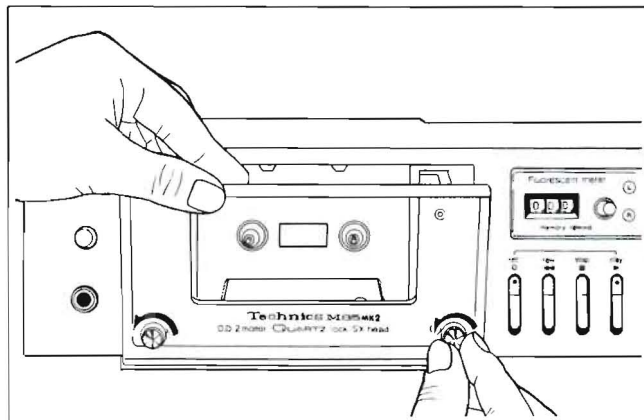
For rack mounting, attach to the rack by using bolts and nuts (or screws, if the rack holes are threaded) which fit the rack holes.



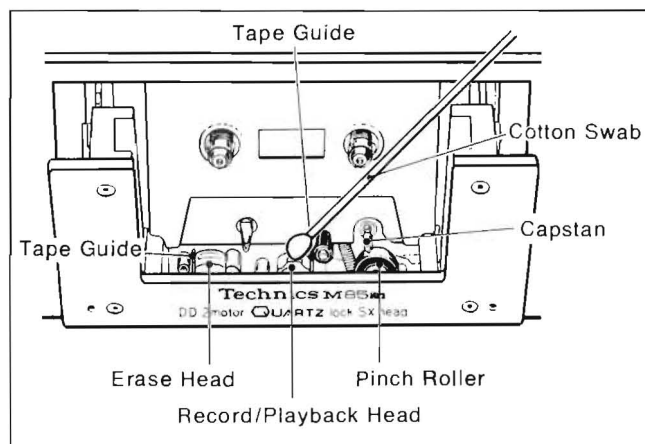
## MAINTENANCE

Because the Head Assembly, Pinch Roller and the Capstan are in constant contact with the moving tape, dirt or residue from the tape on these parts will decrease the sound quality. They should be cleaned after every 10 hours of use, as described below:

1. Press the Eject Button to open the Cassette Holder.
2. To make cleaning of the Head Assembly easier, loosen the screws holding the glass window of the Cassette Holder and remove the glass. Hold the glass with one hand, (when loosening the screws) so that you do not accidentally drop the glass door.



3. Clean the surfaces of the Heads, the Capstan, the Pinch Roller, etc. by using a cotton swab or other soft cloth. If these parts are extremely dirty, dip the cotton swab or cloth in a little alcohol in order to make cleaning easier.



### Notes:

1. Don't allow magnetic materials, such as a Screw-driver or a magnet, near the Head Assembly.
2. When cleaning, be careful not to bend the Tape Guides.
3. Don't attempt to clean the cabinet with alcohol, benzine or thinner, because it will damage the finish. If the cabinet is dirty, clean with a soft cloth dampened with a soap-and-water solution.
4. Handle the glass window (removed to facilitate cleaning of the heads) with care, because it might break if dropped.
5. When "Metal tape" is used, the Head Assembly should be cleaned after each 10 times of use.

IN CASE OF DIFFICULTY

If operation of this unit does not seem normal, check the following points before requesting service. If the trouble cannot in this way be determined and corrected, contact the dealer from whom the unit was purchased.

- 1. After the tape cassette is inserted, the tape does not move when the Play Button is pushed.
  - Is the Power Cord correctly connected?
  - Is the Power Switch pushed it to the "on" position?
- 2. Although the tape moves, no sound is heard.
  - Is the tape blank?
  - Are the connections of amplifier and speakers correct?
  - Are connection cords from this unit to the amplifier correctly connected?
  - Is the volume control of the connected amplifier set to the correct position?
  - Is the monitor switch of the connected amplifier set to the correct position?
- 3. Sound is distorted.
  - Is the recording level too high?
  - Is the playback output level too high?
  - Is the input impedance of the connected amplifier appropriate?
- 4. The Record-Indication Lamp does not illuminate when the Record Button is pressed.
  - Is the tape cassette inserted correctly?
  - Have the recording-prevention tabs of the cassette been removed?
- 5. Tape moves, but no sound can be recorded.
  - Is the Input Selector set, in error, to the "rec mute" position?
  - Is the Input Selector set to the incorrect position?
- 6. Playback sound is hoarse or vibrates. Recorded sound is not clear.
  - Are the head surfaces dirty?
  - Is foreign material adhered to the Pinch Roller and/or the Capstan?

Accessories

Stereo Connection Cords ..... 2

Product Service

Should your Technics product require service, refer to the Directory of Authorized Servicers, or to your franchised Panasonic dealer, for assistance. Do not send the product to the executive, or regional sales offices. They are not equipped to make repairs.

If the unit is brought into a warm room after it has been in a very cold location (freezing temperature), it may not operate properly when first connected. This is due to condensation on internal parts of the unit. This effect will disappear, if it allowed to stand for 30 minutes or so in a warm room before being used.

SPECIFICATIONS

|                               |   |
|-------------------------------|---|
| Track System:                 | 4-track 2-channel stereo recording and playback   |
| Tape Speed:                   | 4.8 cm/s(1-7/8 ips)   |
| Wow and Flutter:              | 0.035% (WRMS)   |
| Frequency Response:           | Metal tape; 20-20,000 Hz<br>30-17,000 Hz ±3dB<br>CrO <sub>2</sub> /Fe-Cr tape;<br>20-18,000 Hz<br>30-16,000 Hz ±3dB<br>Normal tape; 20-16,000 Hz<br>30-14,000 Hz ±3dB |
| Signal-to-Noise Ratio:        | Dolby NR in; 69 dB (above 5 kHz)<br>Dolby NR out; 59 dB<br>(signal level = max. recording level, Fe-Cr/CrO <sub>2</sub> type tape)                                    |
| Fast Forward and Rewind Time: | Approx. 80 seconds with C-60 cassette tape  |
| Inputs:                       | MIC; sensitivity 0.25 mV, applicable microphone impedance 400 Ω-10 kΩ<br>LINE; sensitivity 60 mV, input impedance 68 kΩ   |
| Outputs:                      | LINE; output level 700 mV, load impedance 22 kΩ over<br>HEADPHONE; output level 140 mV, load impedance 8Ω   |
| Bias Frequency:               | 85 kHz  |
| Motors:                       | 2-motor system<br>Capstan; 1-quartz control phase-locked DC brushless direct-drive motor<br>Reel table; 1-DC coreless motor   |
| Heads:                        | 2-head system<br>1-SX (Sendust Extra) head for rec/playback<br>1-sendust/ferrite double-gap head for erasure  |
| Power Requirements:           | AC; 120 V, 50-60 Hz   |
| Power Consumption:            | 40 W  |
| Dimensions (H × W × D):       | 9.7 cm × 48.3 cm × 40.3 cm<br>3-7/8" × 19" × 15-7/8"  |
| Weight:                       | 10.5 kg (23 lbs 1 oz)   |

Specifications are subject to change without notice.

\* Noise reduction system manufactured under license from Dolby Laboratories.

## CAUTION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.

- Relocate the computer with respect to the receiver.

- Move the computer away from the receiver

- Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

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**Panasonic Company**  
**Division of Matsushita Electric**  
**Corporation of America**  
One Panasonic Way, Secaucus  
New Jersey 07094

**Panasonic Hawaii, Inc.**  
91-238 Kauhii St., Ewa Beach  
P.O. Box 774  
Honolulu, Hawaii 96808-0774

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